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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|----------------------------|------------------------|
| 10/771,277 | 02/04/2004 | Shunpei Yamazaki | 740756-2710 | 2066 |
| 22204 | 7590 | 10/09/2007 | | |
| NIXON PEABODY, LLP 401 9TH STREET, NW SUITE 900 WASHINGTON, DC 20004-2128 | | | EXAMINER DUONG, KHANH B | |
| | | | ART UNIT 2822 | PAPER NUMBER |
| | | | MAIL DATE 10/09/2007 | DELIVERY MODE PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/771,277

Applicant(s)

YAMAZAKI ET AL.

Examiner

Khanh B. Duong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7,10,11,14-21,23,24,27 and 28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7,10,11,14-21,23,24,27 and 28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 11, 2007 has been entered.

Response to Amendment

This office action is in response to the amendment filed May 11, 2007.

Accordingly, claims 1-6, 10 and 11 were amended, and claims 12, 13, 25 and 26 were canceled. Claims 8, 9 and 22 were previously canceled.

Currently, claims 1-7, 10, 11, 14-21, 23, 24, 27 and 28 remain pending.

Response to Arguments

Applicant's arguments with respect to the amended claims have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

Claim 16 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 7. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-7, 14-21, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatta et al. (U.S. 20020022364 A1) in view of Ogawa (U.S. 6,871,943) and Koinuma et al. (U.S. 5,549,780).

Claims 1, 7 and 16:

Hatta et al. ("Hatta") discloses in FIGs. 1-5 a manufacturing method of a display device comprising: selectively forming a resist pattern 30 comprising a composition which is emitted by use of droplet emitting means (a spin coater); baking the resist pattern 30; carrying out plasma processing to the baked resist pattern 30 by use of plasma processing means, wherein the droplet emitting means comprises an inherent droplet emitting head for dispensing the resist composition. See page 3, paragraph 0030, and page 4, paragraphs 0040-0043.

Re claim 1, Hatta fails to disclose the droplet emitting head comprises a plurality of droplet emitting holes being disposed in a line form, and the plasma processing means comprises plasma generating means under atmospheric pressure or vicinity of atmospheric pressure.

Ogawa expressly shows in FIG. 13 a droplet emitting head 7 comprising a plurality of droplet emitting holes ("ejection nozzles") 138 disposed in a line form, wherein the droplet emitting head 7 is used for selectively forming metal wiring and resist patterns (see col. 18, lines 14-53; col. 7, line 65 to col. 8, line 5; col. 8, lines 15-22; and col. 31, lines 18-32 and 43-53). However, Ogawa does not teach using atmospheric plasma processing means to perform the steps of ashing and etching,

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wherein the atmospheric plasma processing means comprises plasma generating means under atmospheric pressure or vicinity of atmospheric pressure.

Koinuma et al. ("Koinuma") teaches that etching at atmospheric pressure adds the capability of etching a large area in an open system and does not require the evacuation of a chamber (see col. 3, lines 29-36 and col. 4, lines 34-42).

Since Hatta, Ogawa and Koinuma are from the same field of endeavor, the purposes disclosed by Ogawa and Koinuma would have been recognized in the pertinent prior art of Hatta.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the method of Hatta by using a droplet emitting head comprising a plurality of droplet emitting holes disposed in a line form as taught by Ogawa in order to selectively maximize the output of the droplets thus reducing manufacturing costs. In addition, it would have further been obvious to a person of ordinary skill in the art at the time the invention was made to modify the method of Hatta by ashing or etching under the atmospheric pressure or a pressure close to the atmospheric pressure as suggested by Koinuma because of the desirability to ash or etch a large area in an open system without the burden of having to evacuate a chamber.

Re claims 7 and 16, see discussions above regarding claim 1. Thus, Hatta discloses the droplet comprises a photosensitive resist while Ogawa discloses the droplet comprises a photosensitive resist and a metal material in liquid form.

Claims 2 and 17:

Hatta further discloses: forming the resist pattern 30 over a wiring 20; etching the wiring 20 by use of a plasma; ashing the baked resist by use of plasma processing means after etching the wiring. See page 3, paragraph 0030, and page 4, paragraphs 0040-0043.

Re claim 2, Hatta does not disclose the wiring was selectively formed by use of a droplet emitting means comprising a droplet emitting head in which a plurality of droplet emitting holes being disposed in a line form, and the plasma processing means comprises plasma generating means under atmospheric pressure or vicinity of atmospheric pressure. See discussions above regarding claim 1 for the teachings provided by Ogawa and Koinuma.

Re claim 17, see discussions above regarding claims 7 and 16.

Claims 3 and 18:

Re claim 3, see discussions above regarding claims 1 and 2.

Re claim 18, see discussions above regarding claims 7 and 16.

Claims 4 and 19:

Re claim 4, see discussions above regarding claim 1.

Re claim 19, see discussions above regarding claims 7 and 16.

Claims 5 and 20:

Re claim 5, see discussions above regarding claims 1 and 2.

Re claim 20, see discussions above regarding claims 7 and 16.

Claims 6 and 21:

Re claim 6, see discussions above regarding claims 1 and 2.

Re claim 21, see discussions above regarding claims 7 and 16.

Claims 14 and 27:

Re claim 14, see discussions above regarding claims 1 and 2.

Re claim 27, see discussions above regarding claims 7 and 16.

Claims 15 and 28:

Re claim 15, see discussions above regarding claims 1 and 2.

Re claim 28, see discussions above regarding claims 7 and 16.

Claims 10, 11, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takiguchi et al. (U.S. 6,228,465) in view of Ogawa et al. (U.S. 6,231,917).

Takiguchi et al. ("Takiguchi") expressly discloses in FIG. 5A-5C a manufacturing method of a display device comprising: forming a groove 8 in an insulating film 3 formed on a glass substrate 1; emitting a wiring material in the groove 8 by plating or burying to form a wiring 7 in the groove.

Re claims 10, 11, 23 and 24, Takiguchi fails to disclose: using a droplet emitting means to emit the composition, wherein the droplet emitting means comprises a droplet emitting head in which a plurality of droplet emitting holes are disposed in a line form, wherein the droplet emitting head moves along the groove when emitting the wiring material.

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Ogawa et al. ("Ogawa") expressly shows in FIGs. 6, 15-19 and 34-37 using a droplet emitting means to emit a composition (e.g. SOG, resist or metal), wherein the droplet emitting means comprises a droplet emitting head 20 in which a plurality of droplet emitting holes 11 are disposed in a line form, wherein the droplet emitting head 20 moves along a groove ("depressed portion") when emitting the wiring material for the purpose of forming a film having a flat surface [see col. 20, lines 48-54.

Since Takiguchi and Ogawa are from the same field of endeavor, the purpose disclosed by Ogawa would have been recognized in the pertinent prior art of Takiguchi.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the method disclosed by Takiguchi as taught by Ogawa because of the desirability to selectively form a wiring film having a flat surface.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Komori (JP 411168042 A) shows in Figure 1 a spin coating apparatus comprising a droplet emitting head 5 for dispensing a resist composition 5a [see English Abstract]. Yamazaki (U.S. 7,189,654) and Yamazaki (U.S. 7,176,069) disclose selective deposition of resist patterns.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh B. Duong whose telephone number is (571) 272-

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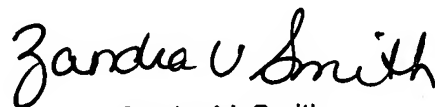
1836. The examiner can normally be reached on Monday to Friday from 8:00 AM-4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith, can be reached on (571) 272-2429. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



KBD



Zandra V. Smith
Supervisory Patent Examiner
08 Sept. 2007